ISSN (print) 0093-4666 © 2012. Mycotaxon, Ltd. ISSN (online) 2154-8889

MYCOTAXON

http://dx.doi.org/10.5248/121.75

Volume 121, pp. 75–79 *July–September 2012*

Two new species in the *Graphidaceae* (*Ostropales, Ascomycota*) from China

Ze-Feng Jia[1], Rui-Fang Wang[1] & Jiang-Chun Wei[2*]

[1]*College of Life Sciences, Shandong Agricultural University, Taian 271018, China*

[2]*Key Laboratory of Systematic Mycology and Lichenology, Institute of Microbiology, Chinese Academy of Sciences, Beijing 100101, China*

[*]Correspondence to: *weijc2004@126.com*

Abstract— During an examination of subtropical and tropical lichen collections from China, two species, *Fissurina isidiata* collected from Hainan Island and *Graphis wangii* collected from Yunnan province, were discovered and are reported as new to science.

Key words— lichenized fungi, taxonomy

Introduction

During the study of the lichen family *Graphidaceae* from China, two interesting corticolous species of *Fissurina* and *Graphis* were found that are reported here as new to science following the new generic concept of the *Graphidaceae* proposed by Staiger (Staiger 2002). The types of the new species are deposited in HMAS-L, LHS and KUN-L in China.

Material & methods

The examined material was collected by the author from Hainan Island and preserved in HMAS-L LHS and KUN-L. Morphological characters were studied on dry specimens using dissecting microscope (Tech XTS-20) and anatomical characters were examined in hand-cut sections of lirellae mounted in water using a research microscope (Olympus CHB-213). The lichen compound was detected by thin-layer chromatography (TLC) (Culberson & Kristensson 1970; Culberson 1972).

Taxonomy

Fissurina isidiata Z.F. Jia, **sp. nov.** Pl. 1

Fungal Name FN570009

Sicut Fissurina astroisidiata, *sed sporis longioribus et acido stictico continente differt.*

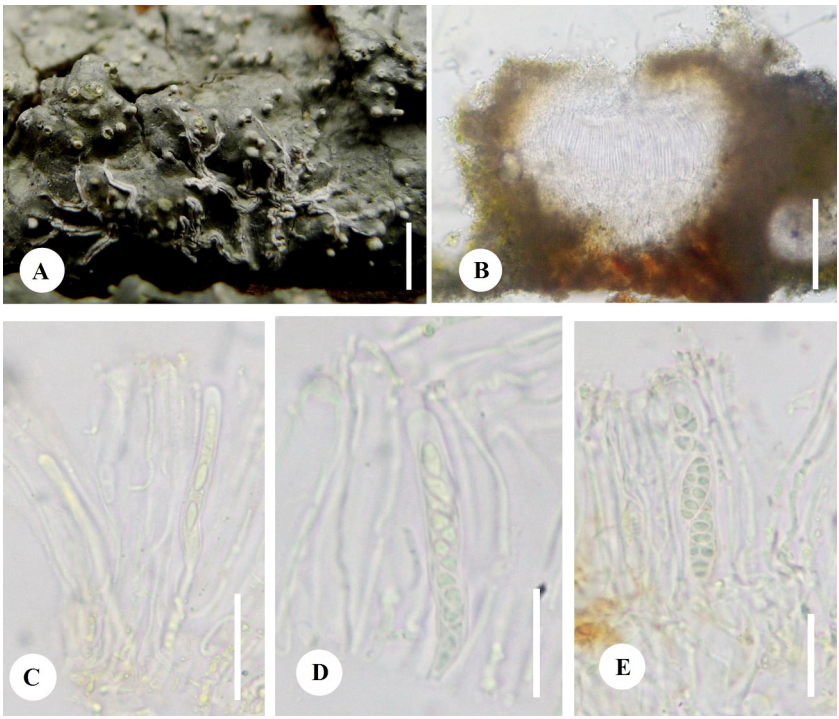

Plate 1 *Fissurina isidiata*. A. Thallus with isidia (bar = 10 mm); B. Cross section of an apothecium (bar = 50 mm); C–E. Ascospores in asci (bar = 50 μm).

Type: China. Hainan Island, Mountain Wuzhi, 18°46′N 109°31′E, alt. 950 m, 30.XI.2010, Ze-Feng Jia 10-612 (**Holotype**, HMAS-L 117919; **isotype**, LHS).

Etymology: from the Latin *isidium*, referring to the isidiate thallus.

Thallus corticolous, crustose, pale green to olive-green, uneven, isidiate, isidia simple, concolorous with the thallus, 0.2–0.3 mm in diameter and 0.3–1.2 mm high, distributed over the thallus.

Ascomata lirelline, lirellae greyish white, 1–10 mm long, usually simple, sometimes branched, more branched at the end of lirellae, fissured, immersed to slightly raised. Disc slit-like, narrow to moderately broad, epruinose, sometimes open when aged. Exciple complete, present below, non-striate, non-carbonized, yellow to dark orange-brown, sometimes becoming darkened laterally or apically, convergent, covered by a thalline margin. Hymenium hyaline, not inspersed, 60–80 μm high, I–, KI–. Hypothecium distinct, thin, pale, 6–8 μm high. Paraphyses simple, 1.5–2.0 μm thick. Periphysoids short to moderately elongate, 3–6 μm long, with warty tips. Asci 8-spored, 50–75 × 5–12.5 μm. Ascospores hyaline, oval or broadly ellipsoidal, transversely

septate when younger, submuriform to muriform, becoming 2–6 × 1–2-locular with age, mature spores 15–20 × 5.5–7.5 µm, sometimes with a halo, I+ reddish violet.

Chemistry: stictic acid present (TLC).

Substrate & distribution: The type specimen was collected in the central region of the Nature Reserve of Mountain Wuzhi with a tropical forest located in the central part of Hainan Province, Southern China. *Fissurina isidiata* is so far known only from the type material. Associated species are *Graphis japonica* (Müll. Arg.) A.W. Archer & Lücking and other graphidean lichens.

Notes: *Fissurina isidiata* is characterised by the presence of an isidiate thallus, fissurine apothecia, a non-carbonized exciple, a clear hymenium, small submuriform ascospores, and the presence of stictic acid. It is the second isidiate species found in the genus *Fissurina*, the first being *F. astroisidiata* Herrera-Camp. & Lücking described from Mexico (Lumbsch & al. 2011). The Mexican species is readily distinguished by shorter, stellately branched lirellae, smaller ascospores (12–15 µm long), and the absence of lichen compounds. *Fissurina abdita* (A.W. Archer) A.W. Archer also possesses small ascospores and stictic acid but is differentiated by a non-isidiate thallus and larger ascospores (18–35 × 8–10 µm and 8–10/2–3 locular as reported by Archer; 2006).

Graphis wangii Z.F. Jia, **sp. nov.** Pl. 2

Fungal Name FN570011

Species nova Graphis biferae *similis sed ascosporis submuriformibus differt.*

Type: China, Yunnan province, Xinping county, Mont. Mopanshan, 23°55′N 101°58′E, alt. 2350 m, on bark of *Quercus* sp.. 3.I.2009. coll. Li-Song Wang 09-30091 (**Holotype**, KUN-L).

Etymology: The new species is named in honour of the esteemed Prof. Li S. Wang, a famous collector and conservator of lichens and mosses from China.

Thallus corticolous, crustose, pale white to whitish grey, surface dull, unevenly thickened, tightly attached to the substratum, without isidia and soralia.

Apothecia lirelliform, elongate to sinuous, simple or rarely branched, 0.5–5 mm long, 0.4–0.5 mm wide, sessile, lacking a thalline margin, black, curved and straight, often rounded at the ends, not striate, scattered over the thallus, disc concealed. Proper exciple conspicuous, completely carbonised. Epithecium 3–5 µm thick, brownish. Hymenium colorless, not inspersed, 180–230 µm high, I–. Hypothecium colourless to brownish, 30–40 µm high. Paraphyses simple, up to 1–1.5 µm wide, apices unbranched. Asci cylindrical to clavate, 110–160 × 15–25 µm, 2–8-spored. Ascospores hyaline, oblong to ellipsoid, transversely septate or with a few central longitudinal septa, 14–20/1–2-locular, 70–103 × 13–20.5 µm, I+ blue-violet.

Chemistry: C–, K–, P–; no lichen compounds detected by TLC.

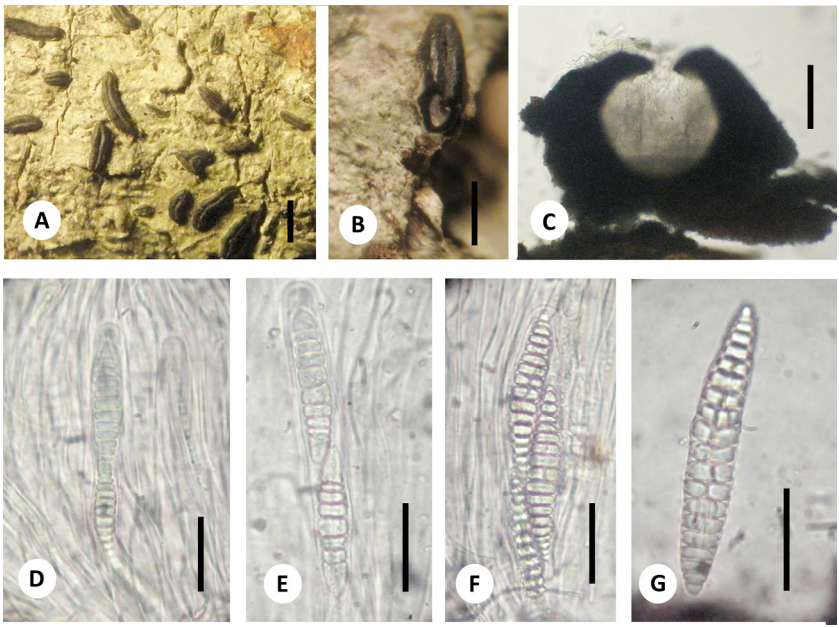

Plate 2 *Graphis wangii*. A. Habit (bar = 2 mm); B. Lirellae showing completely carbonized exciple (bar = 2 mm); C. Cross section of an apothecium (bar = 100 μm); D–F. Asci with ascospores (bars = 50 μm); G. Ascospore (bar = 50 μm).

Notes: *Graphis wangii* is characterized by simple or seldom branched, sessile, lirellae, lacking a thalline margin, *nuda* morph ascomata, a completely carbonized exciple, and a clear hymenium, with submuriform ascospores and lacking lichen compounds.

The new species has similar thallus and lirella morphology and similar chemistry to *G. bifera* Zahlbr., which differs in having ascospores with 15–21 transverse septa (Lücking et al. 2009).

Graphis wangii also resembles *G. lourdesina* Aptroot, described from Brazil (Lücking et al. 2009). Both species have short, simple sessile lirellae, muriform ascospores, and lack thalline margins and lichen compounds, but *G. lourdesina* differs in larger ascospores, 100–120 × 30–35 μm.

At present, the new species is known only from the Mopanshan National Forest Park. It grows on the trunks of *Quercus* sp.

Acknowledgements

The authors are deeply grateful to Dr. Alan W. Archer and Prof. Klaus Kalb for pre-submission reviews and their valuable comments. The authors thank the National Natural Science Foundation of China (No. 39899400) and the Ministry of Science and Technology of China (No. 2006FY110500–5), for their financial support.

Literature cited

Archer AW. 2006. The lichen family *Graphidaceae* in Australia. Bibliotheca Lichenologica 94: 1–191.

Culberson CF. 1972. Improved conditions and new data for the identification of lichen products by a standardized thin-layer chromatographic method. Journal of Chromatography 72: 113–125. http://dx.doi.org/10.1016/0021-9673(72)80013-X

Culberson CF, Kristensson H. 1970. A standardized method for the identification of lichen products. Journal of Chromatography 46: 85–93. http://dx.doi.org/10.1016/S0021-9673(00)83967-9

Lücking R, Archer AW, Aptroot A. 2009. A world-wide key to the genus *Graphis* (*Ostropales: Graphidaceae*). Lichenologist 41(4): 363–452. http://dx.doi.org/10.1017/S0024282909008305

Lumbsch HT, et al. 2011. One hundred new species of lichenised fungi: a signature of undiscovered global diversity. Phytotaxa 18: 1–127.

Staiger B. 2002. Die Flechtenfamilie *Graphidaceae.* Bibliotheca Lichenologica 85: 1–526.